

Installation Guide

Redundant Power Upgrade Kit

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Redundant Power Upgrade Kit Installation Procedures

This guide contains the information necessary to install, test, and troubleshoot (if necessary) the *Redundant Power Upgrade*. This guide is written for knowledgeable users, trained customer engineers, system analysts, service center personnel, and dealers.

With the upgrade kit installed, the server will have power system redundancy that allows the system to operate with a single power supply failure. Also, when the additional redundant power supply is installed, both the standard and additional redundant power supply slots become hot swappable.

Please read these installation procedures in their entirety before starting.

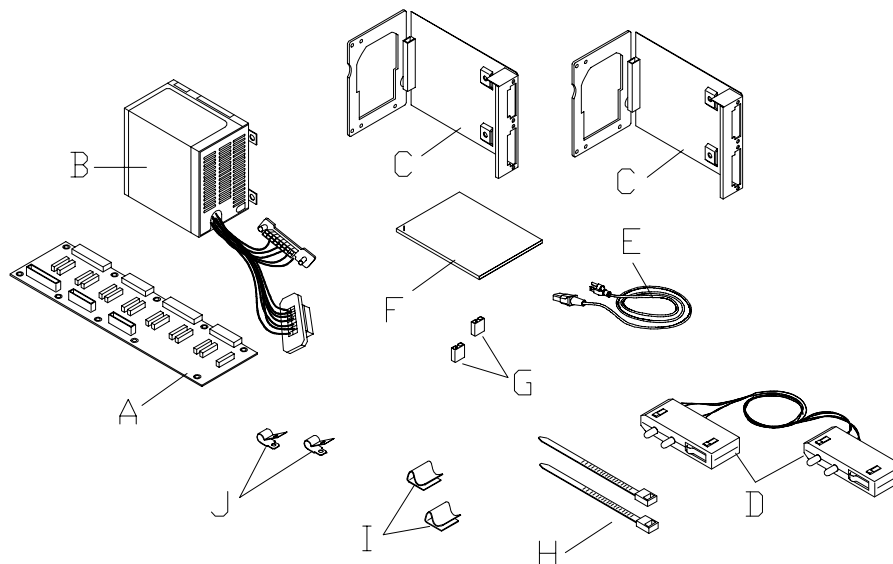
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The NEC Redundant Power Upgrade Kit contains the components necessary for adding system power redundancy capabilities to the NEC Express5800/120Mc2 and Express5800/120Mc3 Server Systems.

The following items shown in the figure below are included in the kit.



- | | |
|----------|------------------------------------|
| A | power controller board |
| B | redundant power supply (300 watts) |
| C | two power supply carriers |
| D | LED/switch assembly |
| E | ac power cord |
| F | this installation guide |
| G | two pin jumpers (2) |
| H | two tie-wraps |
| I | two cable keeps |
| J | two tie wrap clamps |

Upgrade Kit Contents

Use the following installation information as a guide for installing the upgrade kit. Also, see the option installation instructions, which are located in the "Upgrading Your System" Chapter of the User's Guide that come with the online documentation on the NEC EXPRESSBUILDER CD-ROM supplied with the server, or see the "Disassembly and Reassembly" Chapter of the Service Guide.

If additional option installation information is required, read and print it out from the online document before beginning the upgrade installation.

The upgrade kit adds the following capabilities to the server:

- redundant power
- self-contained power supplies that can be easily installed or removed from the rear of the chassis (hot swappable)
- interlock switch capabilities
- hardware monitors (power supply status and dc power status)
- power presence switch.

The upgrade kit is installed in the following order:

- prepare the system by removing the original components
- install the new upgrade components
- power up and test the installation

Preparing the System

Before installing the upgrade kit, the following components must be removed:

- server side panels
- standard power supply and mounting plate
- power supply retaining bracket
- power supply blank mounting plate.

Component removal is described in the following paragraphs.

Removing the Server Side Panels

To install the redundant power upgrade in the server, the server side panels must be removed. Also, please note that the right side panel removes in the same manner as the left side panel.



CAUTION

For proper cooling and airflow, do not operate the system with the side panels removed. Always replace the panels before powering on the system.

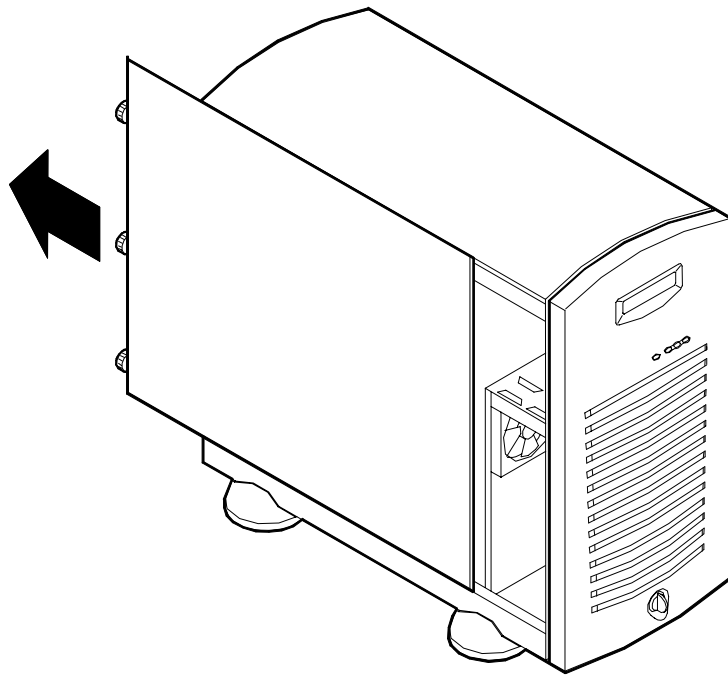


WARNING

Before removing the server covers, turn off the power and unplug the system power cables. Power is removed only when the power cables are unplugged.

To remove a side panel:

1. Unlock and open the server front door (tower version only).
2. Close all programs in use and shutdown the operating system.
3. Turn off power to any peripheral devices.
4. Power off the server by pressing the power button on the front of the server. The power indicator goes out.
5. Disconnect all cables from the back of the server and unplug all power cords. The power supply status indicators go out.
6. The side panel is secured to the chassis with three thumbscrews (see figure below). Loosen the thumb screws securing the side panel
7. Slide the side panel toward the rear of the chassis. This unlocks the locking fingers behind the side panel.
8. Pull the side panel out and away from the chassis.

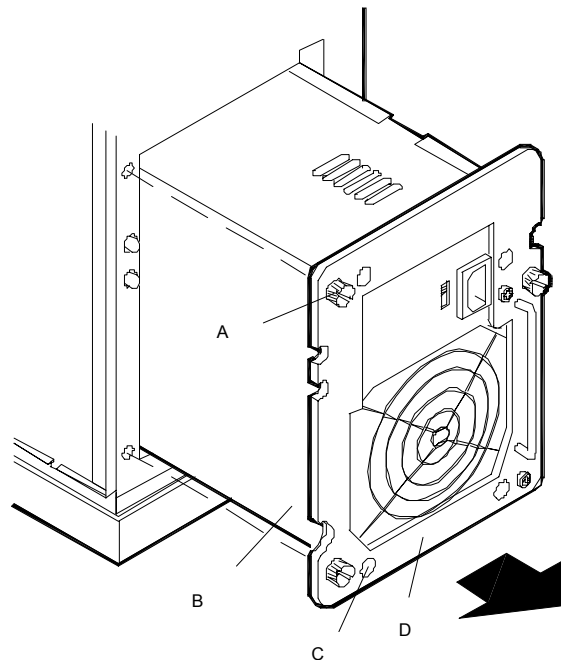


Removing a Server Side Panel

Removing the Standard Power Supply and Rear Mounting Plate

1. Power off the system and unplug the power supply ac power cable.
2. Remove the right side panel as described earlier.
3. Disconnect the internal power cables from the power supply inside the chassis.
4. Remove the two screws securing the front of the power supply to the power supply retaining bracket that is attached to the inside of the chassis.
5. Loosen the three thumbscrews (see A in figure below) that secure the power supply assembly to the rear panel.
6. Remove the power supply assembly (B) from the rear of the chassis.
7. Remove the four screws (C) securing the power supply rear mounting plate (D) and remove the plate.

 **Note:** The power supply's rear mounting plate is no longer needed.

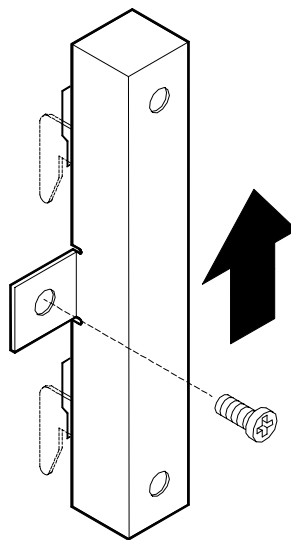


Removing the Power Supply and Rear Mounting Plate

Removing the Power Supply Retaining Bracket

1. Power off the system and unplug the power supply ac power cable.
2. Remove the right side panel and standard power supply (if not already removed) as described earlier.
3. Remove the screw (see figure below) that secures the power supply retaining bracket to the chassis.
4. Remove the power supply retaining bracket from the chassis.

 **Note:** The power supply retaining bracket is no longer needed.

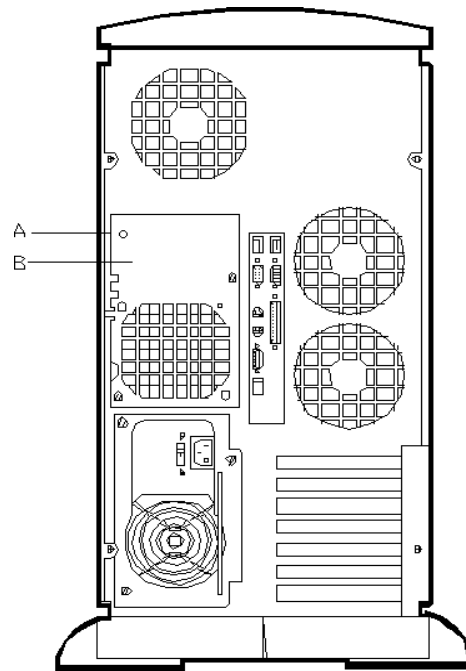


Removing the Power Supply Retaining Bracket

Removing the Power Supply Blank Mounting Plate

1. Power off the system and unplug the power supply ac power cable.
2. Loosen the three thumbscrews (see A in figure below) that secure the power supply blank mounting plate (B) to the rear panel.
3. Remove the power supply blank mounting plate (B) from the rear of the chassis.

 **Note:** The power supply blank mounting plate is no longer needed.



Removing the Power Supply Blank Mounting Plate

Installing the Upgrade Components

Install the following upgrade components:

- power controller board
- two jumpers
- LED/switch assembly
- interlock switches
- two redundant power supplies.

See the following paragraphs for installation procedures.

Installing the Power Controller Board

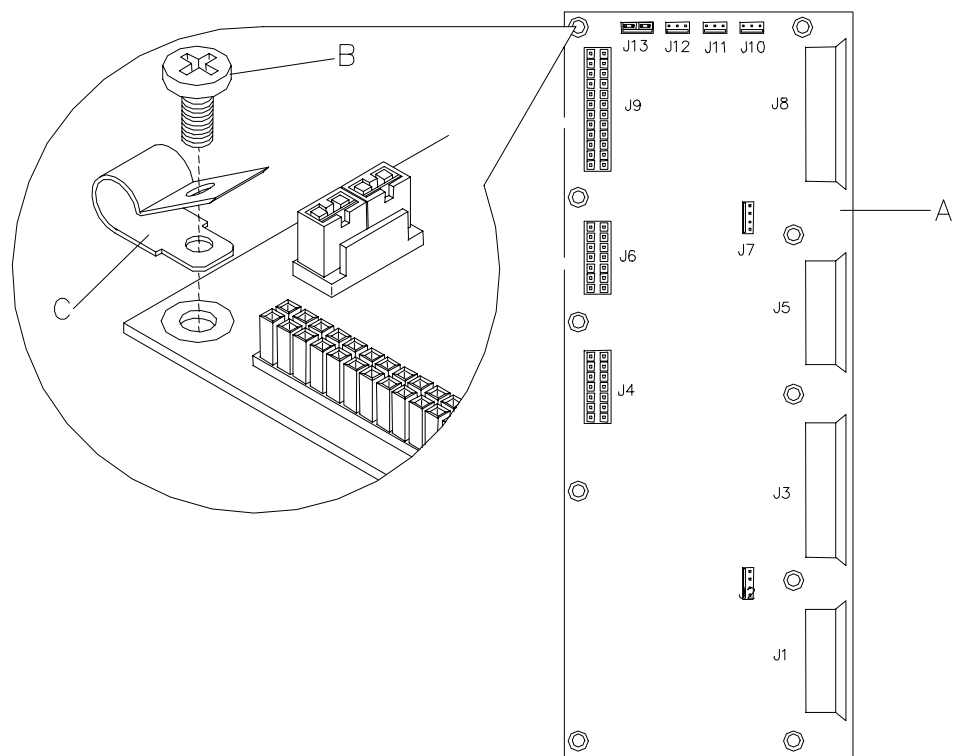


CAUTION

Electrostatic Discharge (ESD) can damage electronic components.

Install the new power controller board in the server as follows.

1. Align the power controller board (A) so that its side power supply connectors (J1, J3, J5, and J8) face the power supply slots (see the figure below).
2. Install and secure the power controller board to the chassis with the ten screws (B) and two tie wrap clamps (C) supplied with the kit. The two tie wrap clamps are installed under the top two screws located on the left-hand side of the power controller board.



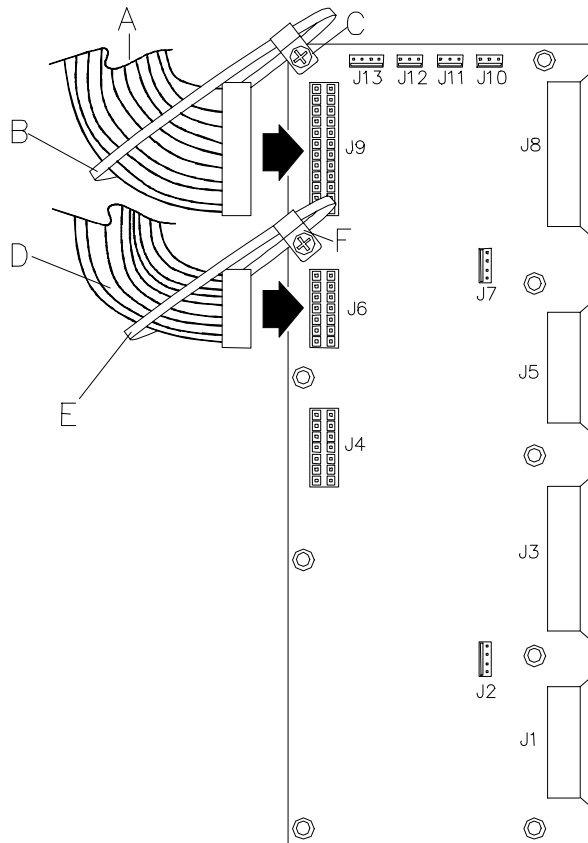
Installing the Power Controller Board

-
3. Attach the main power cable (A) that comes from the system board power connector (see list below) to J9 on the power controller board (see the figure below). Secure the cable by threading a tie wrap (B) through tie wrap clamp (C) and around the cable, and tighten. Trim the plastic tie wrap.

For 120Mc2 System Board use the power cable from power connector P23.

For 120Mc3 System Board use the power cable from power connector P28.

4. Attach the back plane power cable (D) that comes from J4 on the SCSI backplane to J6 on the power controller board (see the figure below). Secure the cable by threading a tie wrap (E) through tie wrap clamp (F) and around the cable, and tighten. Trim the plastic tie wrap.

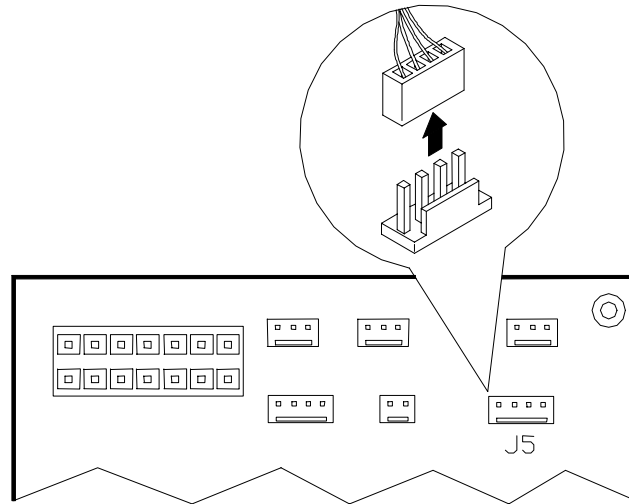


Attaching the Power Controller Board Cables

Installing Jumpers and Disconnecting the Intrusion Switches

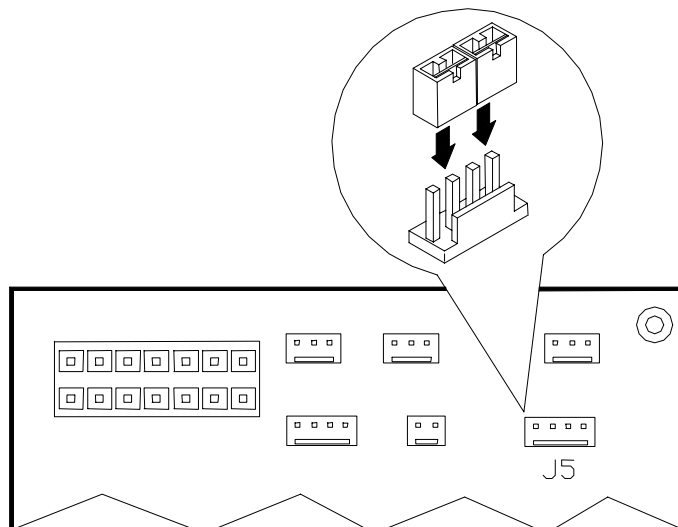
To disconnect the intrusion switches and install the two new jumpers perform the following procedures.

1. Remove the cable from connector J5 on the SCSI backplane (see the following figure). The cable will be reconnected when installing the Interlock Switches later in this Guide.



Unplugging the Intrusion Switches on the SCSI Backplane

2. Install the two jumpers supplied with your kit onto connector J5 on the SCSI backplane (see the following figure).

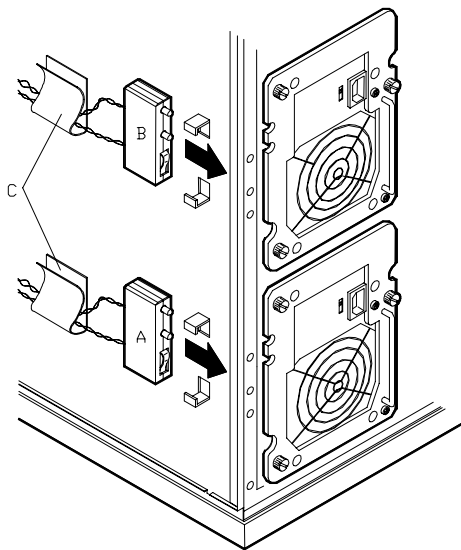


Installing Jumpers on the SCSI Backplane

Installing the LED/Switch Assembly

Install the new LED and presence switch assembly in the server as follows.

1. Insert the top and bottom power supply LED/switch assembly modules as shown in the following figure. In the following two figures match **A** to **A** and **B** to **B**.



Installing the Top and Bottom LED/Switch Assembly Modules

2. Cable the top and bottom power supply LED/switch assembly modules exactly as stated below and as shown in the following figure.

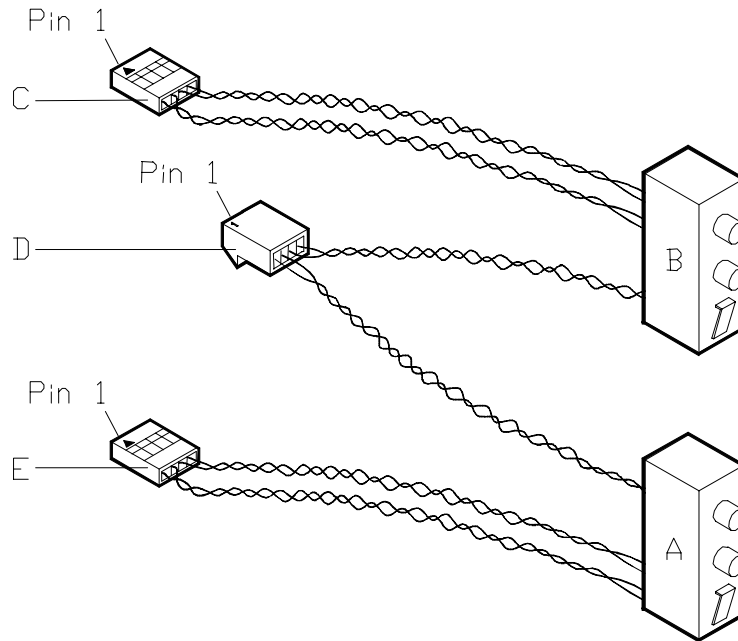
Top PSU LED Cable Connector (Single Cable) — Plugs into connector J7 on the power controller board.

Bottom PSU LED Cable Connector (Single Cable) — Plugs into connector J2 on the power controller board.

Data Cable Connector (Double Cable) — Plugs into connector J7 on the SCSI backplane. Remove the jumpers plugged into J7.

Secure the loose cables by attaching and using the two "Cable Keeps" (C), as shown in the above figure. The "Cable Keeps" are attached by peeling the backing off the adhesive and sticking them to the appropriate location on the side of the chassis.

 **Note:** When plugging in the Data cable connector (D) and the Top and Bottom LED cable connectors (C and E), pin 1 on these connectors must be positioned to line up with pin 1 on the corresponding connectors they are plugging into. For the location of pin 1 on these connectors, see the following figure.

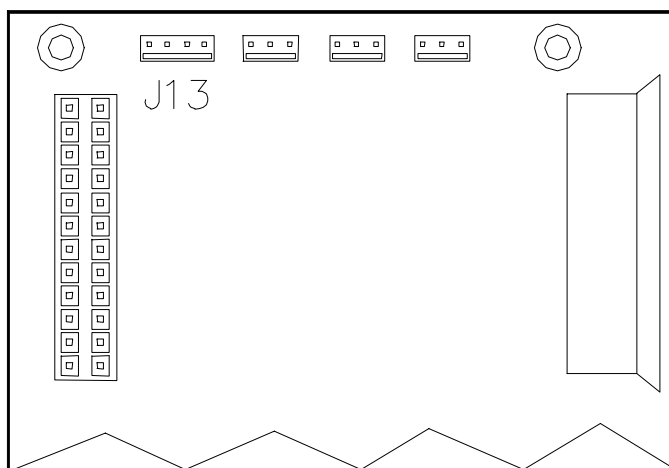


- A** Bottom power supply LED/switch assembly module.
- B** Top power supply LED/switch assembly module.
- C** Top PSU LED cable connector.
- D** Data cable connector.
- E** Bottom PSU LED cable connector.

Attaching the LED/Switch Assembly Module Cables

Installing Interlock Switches

To install interlock switches attach the cable connector previously removed from J5 on the SCSI backplane to J13 on the power controller board (see the following figure). Also, see step 1 in paragraph "Unplugging the Intrusion Switches and Installing Jumpers" for cable connector previously removed from J5 on the SCSI backplane.



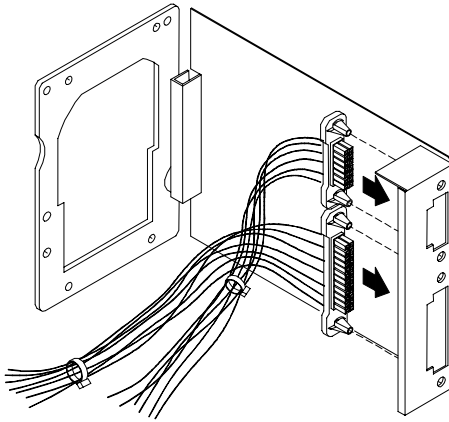
Installing Interlock Switches Cable

Installing the Redundant Power Supplies

Install the two redundant power supplies in the server as follows:

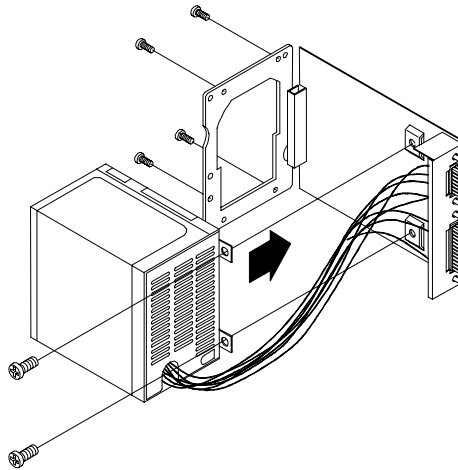
Perform the following procedures for each power supply.

1. Attach the two power supply cables to the connector bracket on the back of the power supply carrier supplied with your kit (see the following figure).



Attaching the Two Power Supply Cables

2. Secure the power supply to the carrier with four screws on the rear carrier plate and two screws on the front supporting brackets of the power supply (see the following figure).



Attaching the Power Supply to the Carrier

3. Slide the power supply carrier into the power supply slot and secure with the three thumbscrews.

-
4. Ensure that both power supplies have their line voltage selector switch set to the same voltage (see the following figure).

 CAUTION

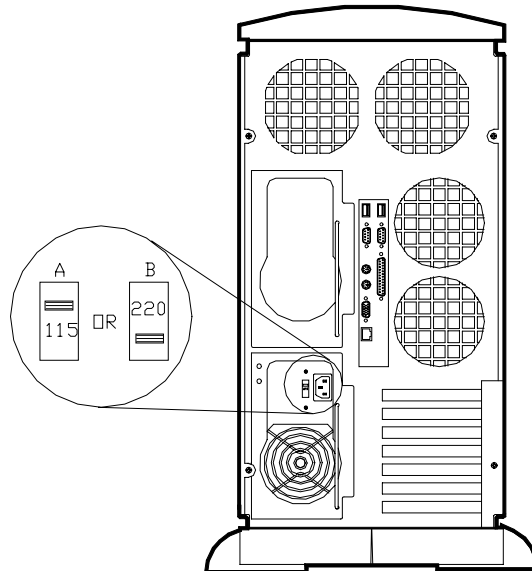
Before you plug the system power cord into an AC outlet, ensure the input line voltage setting for the power supply is correct.

To use the system with line source voltages between 200 and 240 VAC, the line voltage selector switch on the power supply must be set to 230. If you set the switch to the 115 VAC position, the power supply will be damaged when you plug in your system.

When two power supplies are installed in the system both power supplies must have their line voltage selector switch set to the same voltage.

If you need to change the line voltage setting, perform the following steps.

1. Unplug the AC power cord from the back of the chassis.
2. Insert the tip of a small screwdriver or ballpoint pen into the depression on the line voltage selector.
3. Slide the selector switch to 115 VAC or to 230 VAC (line source voltage range: 220 to 240 VAC).



A – Voltage selector switch set to 115 VAC

B – Voltage selector switch set to 230 VAC

Setting the Line Voltage

Installing the Server Side Panels

Use this procedure to install the two side panels on your server. (See "Removing the Server Side Panels" earlier in this document for additional information.)

Install the side panels as follows.

1. From the rear of the server align the locking tabs on each side panel with the corresponding slots in the chassis.
2. Slide each side panel towards the front of the chassis until it locks in place.
3. Secure each side panel with its thumbscrews.

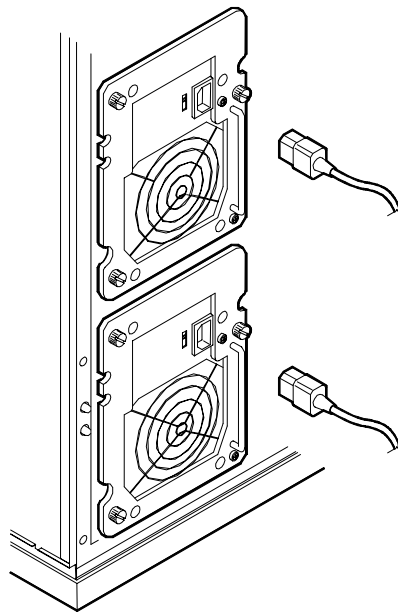
Powering Up and Testing the Server

Installation of the Upgrade Kit is now complete; power up and test the server.

Connect all cables and ac power cords as follows.

 **Note:** Make sure all cable connections are tight.

1. As appropriate, connect all cables previously removed from the back of the server.
2. Connect an ac power cord from each of the power supplies to an ac power outlet (see the following figure).



Plugging in the AC Power Cords

Power up and test the server as follows.

1. Press the Power button on the front panel.
2. The server boots up.
3. Check the front system indicators for power alarms and abnormal power status.
4. If no messages appear on the monitor screen, turn off the server and see "Troubleshooting," next.

Troubleshooting

After installation of the upgrade kit, during the server's initial power up sequence, if no messages appear on the monitor screen, check the following.

- Are all peripheral and power cables securely connected? Check and tighten the cables.
- Are both power supplies fully seated and installed correctly? Check installation and reseal the power supplies.
- Is the monitor powered on and adjusted correctly? Turn monitor power on and adjust the controls.
- Does the electrical outlet have ac power? Check the outlets.
- Are the side panels properly installed? Remove and reinstall.
- If this does not solve the problem, power down the server and peripherals, disconnect all peripherals, unplug the power cords, and open the server to check for:
 - internal cabling pinched or improperly connected
 - incorrect jumper setting on the SCSI backplane
 - improperly installed power controller board.
- If the problem persists, contact your NEC service representative.